

REMARKS

Claims 1 – 29 are now pending in the application, claims 30 – 40 having been withdrawn. The Examiner is respectfully requested to reconsider and withdraw the rejection(s) in view of the remarks contained herein.

DRAWINGS

The drawings stand objected to for certain informalities. Applicants have attached a revised Figure 3 for the Examiner's approval. In the "Replacement Sheet", Figure 3 has been amended to show in phantom that keying slot 95 is narrower than keying slot 96. Applicants submit that the amendment to Figure 3 addresses the Examiner's objection to the drawings.

SPECIFICATION

Applicants have amended paragraph 35 of the specification to reference the above discussed change to Figure 3 of the drawings.

REJECTION UNDER 35 U.S.C. § 112

Section 1

Claims 1 – 29 stand rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point and distinctly claim the subject matter which Applicant regards as the invention. This rejection is respectfully traversed.

The Examiner takes the position that these claims are indefinite because they do not specify the type of material that is overmolded around the plurality of magnets and, according to the Examiner, one skilled in the art would not be able to determine whether there is patentable infringement or not. Quite simply, applicants invention in the broadest sense pertains to the use of any type of material that is overmolded around the plurality of magnets and that secures the magnets to the flux ring and the flux ring to the housing. Thus, one skilled in the art would easily be able to determine if infringement exists because the use of any material overmolded around the magnets to secure them to the flux ring and the flux ring to the housing would result in infringement provided that the remaining limitations of the claims are also met.

Moreover, claims 10 and 28 require that the overmold material be plastic and the Examiner has not addressed why these claims, which do specify the type of material, are indefinite.

REJECTION UNDER 35 U.S.C. § 103

Sections 2 - 5

Claims 1, 3 – 6, 10, 11, 14, 15 and 17 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over McManus (U.S. 5,268,607) in view of Brassard (U.S. 5,861,695). Claim 2 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over McManus and Brassard as applied to claim 1 and further in view of Shiga et al. (U.S. 5,475,276). Claims 8 and 19 stand rejected under 35 U.S.C. 103(a) as being unpatentable over McManus and Brassard as applied to the base claim and further in view of Yamano (U.S. 5,783,888). Claim 9 stands rejected under 35 U.S.C. 103(a) as being unpatentable over McManus and Brassard, as applied to the base claim, and further in view of Tanaka (U.S. 4,015,154). These rejections are respectfully traversed.

Claims 1 and 14 are the independent claims of this group. With regard to claim 1, it is directed to a stator assembly and requires that the stator assembly have a housing, a flux ring disposed in the housing and a plurality of magnets disposed around an inner surface of the flux ring. It also requires that the plurality of magnets be secured to the flux ring by an overmolding of material that also secures the flux ring to the housing.

The Examiner takes the position that McManus discloses all the limitation of claim 1 except for securing the plurality of magnets with the overmolding of material. More specifically, the Examiner takes the position that the molding material of McManus' molded resin motor housing is an overmolding of material around the flux ring that secures the flux ring to the housing. Applicants submit that this is incorrect. McManus' flux ring 38 is not secured to McManus' molded resin motor housing 12 by an

overmolding of material. Rather, flux ring 38 is molded in place in molded housing 12 as molded housing 12 is being molded. [McManus, col. 2, lines 50 – 53; col. 3, lines 50 - 68] In other words, there is no overmolding of material that secures the flux ring to the housing because the flux ring is molded in place when the housing is formed and it is the material of the housing itself that secures the flux ring, not separate material overmolded over the flux ring to secure it to the housing. Brassard similarly does not disclose securing a flux ring to a housing by an overmolding of material, and the Examiner does not cite it as doing so. Applicants submit that claim 1 is thus allowable over McManus in view of Brassard.

Moreover, Brassard discloses securing permanent magnets 2 to yoke 1 with an over-molding of material 4. Yoke 1, which is also referred to as the core, appears to be the housing of Brassard's inductor and Brassard does not appear to contemplate a separate flux ring and housing where the permanent magnets are secured to the flux ring which is secured to the housing. Applicants submit that combining Brassard with McManus therefore teaches away from applicant's invention as claimed in claim 1 that requires a separate flux ring and housing where the permanent magnets are secured to the flux ring by an overmolding of material which also secures the flux ring to the housing.

Claim 6, which depends indirectly from claim 1, requires that one of the flux ring and housing includes at least one projection and the other of the flux ring and the housing includes at least one hole with the projection being received in the hole to align the flux ring in the housing. The Examiner cites McManus' protrusions 52, 54 as being projections that are received in a hole in the flux ring. However, since protrusions 52,

54 are molded when housing 12 is molded with flux ring 38 in place, these protrusions do not act to align the flux ring 38 in the housing as the flux ring 38 is already in place when these protrusions are molded. Applicants submit that claim 6 is allowable over McManus in view of Brassard for this reason.

Claim 8, which depends from claim 1, requires at least one of a rear bearing support, front bearing support and fan baffle integrally formed of the overmold material during molding of the overmold material. Claim 19 is an independent claim and requires at least one of a rear bearing support, front bearing support and fan baffle integrally formed of the overmold material which secures the permanent magnets to the flux ring and the flux ring to the housing of the stator assembly. The Examiner takes the position that McManus and Brassard substantially disclose the claimed invention, other than at least one of a rear bearing support and fan baffle integrally formed of the overmold material. The Examiner cites Yamano as teaching a stator assembly that includes a fan with a baffle, front and rear bearing support integrally formed of an overmold material.

Applicants submit that contrary to the Examiner's position, McManus does not disclose a front bearing support integrally formed of the overmold material that secures the permanent magnets to the flux ring and the flux ring to the housing. Rather, as discussed above, McManus' flux ring 38 is molded in place when McManus' housing 12 is molded. Similarly, McManus' front bearing support 22 is also molded when the housing is molded and is thus not molded of overmold material that secures the permanent magnets to the flux ring and the flux ring to the housing.

The Examiner cites Yamano as teaching a stator assembly that includes a fan (4) with baffle (4a), front and rear bearing supports (2) for supporting front bearing (2a) and

rear bearing (2b) integrally formed of an overmold material that is synthetic resin (27). Element 27 of Yamano is disclosed as a synthetic resin member that is molded integrally as part of annular disk 21 [Yamano, col. 7, lines 42, 43] which is more in the nature of a housing molded of synthetic resin than an overmold material that is used to secure permanent magnets to a flux ring and the flux ring to the housing. Thus, Yamano does not teach at least one of a rear bearing support, front bearing support and fan baffle integrally formed of the overmold material that secures the permanent magnets to the flux ring and the flux ring to the housing. Applicants submit that claims 8 and 19 are thus allowable over the combination of McManus, Brassard and Yamano.

Claim 9, which depends from claim 1, requires a rear bearing support integrally formed of the overmold material during molding of the overmold material, the rear bearing support including a cap having a pocket therein for receiving a bearing. The Examiner takes the position that McManus and Brassard substantially disclose all the limitations of claim 9 except for the limitations expressly recited in claim 9, that is, a rear bearing support integrally formed of the overmold material, the rear bearing support including a cap having a pocket therein for receiving a bearing. The Examiner then takes the position that Tanaka et al. teaches an overmolded stator assembly having a cap (5) which has a pocket therein for receiving a rear bearing (citing to Fig. 6). However, item 5 of Tanaka et al. is a molded bracket that closes Tanaka et al's. casing 2. Bracket 5 is attached to casing 2 such as by screws. [See, Tanaka et al., Fig. 1] Thus, Tanaka et al's. bracket 5 is a separate part from casing 2 and cannot be said to teach a rear bearing support integrally formed of the overmold material that is used to secure permanent magnets to a flux ring and the flux ring to a housing, all of which is

required by claim 9. Applicants submit that claim 9 is allowable over the combination of McManus, Brassard and Tanaka et al.

Claim 14 has limitations comparable to those of claim 1 and is allowable over McManus in view of Brassard for at least the same reasons as claim 1.

Claim 15, which depends from claim 14, contains limitations comparable to those of claim 6 and is allowable over McManus in view of Brassard for at least the same reasons as claim 6.

Claims 2 – 6, 9, 10 and 11 depend directly or indirectly from claim 1 and are allowable for at least that reason.

Claims 15 and 17 depend directly or indirectly from claim 14 and are allowable for at least that reason.

Section 6

Claims 1, 11 and 20 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Brennan et al. (U.S. 4,873,461) in view of Brassard (U.S. 5,861,695). The Examiner takes the position that Brennan et al. discloses the claimed invention except for a flux ring disposed within a stator housing and a material overmolded around the plurality of magnets to secure the magnets to the flux ring and secure the flux ring to the housing. The Examiner then cites Brassard as teaching these limitations.

Brassard discloses permanent magnets 2 secured to a yoke 1 by overmolding material 4. Brassard does not, however, disclose securing a flux ring to a housing, let alone by the overmolding material. In fact, yoke 1 appears to be the housing for

Brassard's inductor for an electric rotary machine as Brassard does not disclose both a flux ring and a housing. Applicants submit that claims 1, 11 and 20 are allowable over the combination of Brennan et al. and Brassard.

Claim 11, which depends from claim 1, requires at least one keying feature formed in the overmold material between magnetic poles of the stator assembly. Brennan et al. does not utilize overmold material so cannot disclose or suggest this limitation. The Examiner takes the position that one embodiment of Brassard shows two poles, each having two permanent magnets, with the poles separated by a keying slot therebetween. The embodiment of Fig. 3 is the only embodiment that shows two permanent magnets per pole so applicants assume that the Examiner is referring to the embodiment of Fig. 3. However, Fig. 3 shows at best a wide gap between the two poles and there is not discussion that this gap in any way functions as a keying slot. Applicants submit that claim 11 is allowable over Brennan and Brassard for this reason also.

Section 7

Claims 2 and 21 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Brennan and Brassard, as applied to the base claims, and further in view of Shiga et al. (U.S. 5,475,276). Amended claim 2 depends from claim 1 and requires that the flux ring includes anchors extending radially inward with the plurality of permanent magnets disposed between the anchors and the overmold material also molded around the anchors. Amended claim 21 depends from claim 20 and contains similar limitations.

The Examiner takes the position that Brennan and Brassard disclose the limitations of claims 2 and 21 except for the limitations expressly recited therein – that the flux ring include anchors extending radially inward with the plurality of permanent magnets disposed between the anchors.

To begin with, applicants submit that Brennan and Brassard do not disclose or suggest the limitations of the base claims 1 and 20 for the reasons discussed with regard to claims 1 and 20, and claims 2 and 21 are thus allowable as depending from claims 1 and 20, respectively. Applicants further submit that Shiga et al.'s. concave portions 4 are not anchors, and in particular are not anchors with the overmold material also molded around them as is now required by amended claims 2 and 21. In Shiga et al., the permanent magnets 6 are attached with adhesive [Shiga et al., col. 3, lines 52, 53] and Shiga et al. thus has no need for anchors. Applicants submit that claims 2 and 21 are allowable over the combination of Brennan, Brassard and Shiga et al. for this reason also.

Section 8

Claims 3 – 5, 14 and 22 – 24 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Brennan and Brassard and further in view of Abbratozzato et al. (U.S. 4,682,066). The Examiner takes the position that Brennan and Brassard disclose the claimed inventions with the exception of the flux ring having a seam that allows the flux ring to be compressed for insertion into the housing during assembly of the stator assembly and a seam of the flux ring aligned with one of the magnetic poles. The Examiner then takes the position that Abbratozzato et al. teaches these limitations.

Claims 3 – 5 depend, directly or indirectly, from claim 1 and claims 22 – 24 depend, directly or indirectly, from claim 20. For the reasons discussed above with regard to claims 1 and 20, applicants submit that Brennan and Brassard do not disclose or suggest the limitations of these claims. Applicants submit that claims 3 – 5 and 22 – 24 are thus allowable over the combination of Brennan, Brassard and Abbratozzato et al. as depending, directly or indirectly, from claims 1 and 20, respectively. Since claim 14, which is an independent claim, contains limitations comparable to those of claim 1, applicants submit that it is allowable over the combination of Brennan, Brassard and Abbratozzato et al. for these same reasons.

Applicants further submit that end caps 38, 40 of Abbratozzato et al. are just that, end caps, and not a housing. In this regard, Abbratozzato et al.'s. spring means 60 biases permanent magnet array 54 radially inwardly against cooperating radial orientation surfaces 62 formed on end caps 38, 40. In contrast, claims 3, 14 and 22 require that the overmold material expand the flux ring against the housing. Thus, Abbratozzato et al.'s. spring means 60 does the opposite of what is required by claims 3, 14 and 22, it biases the permanent magnet array 54 radially inwardly where claims 3, 14 and 22 require that the flux ring be expanded outwardly against the housing by the overmold material. Applicants submit that claims 3, 14 and 22 are thus allowable over the combination of Brennan, Brassard and Abbratozzato et al., as re claims 4 and 5 which depend from claim 3 and claims 23 and 24 which depend from claim 22.

Applicants also respectfully disagree that Brassard shows a flux ring 1 having a seam 11 that is filled with overmolded material. Applicants submit that elements 11 are holes, not seams. Otherwise, yoke 1 would be two half shells, which is the embodiment

shown in Fig. 4 of Brassard, and if yoke 1 is two half shells, yoke 1 is no longer compressible and expandable in the manner required by claims 3 – 5, 14 and 22 – 24.

Section 9

Claims 6, 15, 17 and 25 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Brennan, Brassard and Abbratozzato as applied to the base claims and further in view of Akiwa (Pat Pub US 2002/0079769 A1). The Examiner takes the position that the combination of Brennan, Brassard and Abbratozzato disclose the limitations of these claims except for the limitations expressly recited in them – that of at least one projection and at least a hole formed in the flux ring and the housing so that the projection is received in the hold to align the flux ring in the housing and wherein the hole and the projection are disposed about ninety degrees from the seam of the flux ring. Applicants submit that for the reasons discussed above with regard to the base claims, the combination of Brennan, Brassard and Abbratozzato does not disclose or suggest the limitations of the base claims. Applicants submit that claims 6, 15, 17 and 25 are thus allowable for at least the reason of depending from the base claims.

Claim 17, which depends from claim 15, which in turn depends from independent claim 14, requires that the projection and hole of the flux ring and housing are aligned with a second magnetic pole of the stator assembly. Claim 15 requires that a seam of the flux ring is aligned with a first magnetic pole. None of Brennan, Brassard, Abbratozzato and Akiwa disclose or suggest a stator assembly having a flux ring with a seam aligned with a first magnetic pole of the stator assembly and a projection and hole of the flux ring and housing aligned with a second magnetic pole of the stator assembly.

Applicants submit that claim 17 is allowable over the combination of Brennan, Brassard, Abbratozzato and Akiwa for this reason also.

Section 10

Claims 8 – 10, 19, 27 and 28 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Brennan, Brassard and Abbratozzato as applied to the base claims and further in view of Yamano. The Examiner takes the position that the combination of Brennan, Brassard and Abbratozzato disclose the limitations of these claims except for the limitations expressly recited in them – the limitations of the bearing holders and fan baffle integrally formed of overmold material. The Examiner then takes the position that Yamano teaches these limitations.

For the reasons discussed with regard to the base claims, applicants submit that the combination of Brennan, Brassard and Abbratozzato fail to disclose or suggest the limitations of the base claims. Applicants submit that claims 8 – 10, 19, 27 and 28 are allowable over the combination of Brennan, Brassard, Abbratozzato and Yamano as depending from the base claims.

The Examiner cites Yamano as teaching a stator assembly that includes a fan (4) with baffle (4a), front and rear bearing supports (2) for supporting front bearing (2a) and rear bearing (2b) integrally formed of an overmold material that is synthetic resin (27). Element 27 of Yamano is disclosed as a synthetic resin member that is molded integrally as part of annular disk 21 [Yamano, col. 7, lines 42, 43] which is more in the nature of a housing molded of synthetic resin than an overmold material that is used to secure permanent magnets to a flux ring and the flux ring to the housing. Thus,

Yamano does not teach at least one of a rear bearing support, front bearing support and fan baffle integrally formed of the overmold material that secures the permanent magnets to the flux ring and the flux ring to the housing. Applicants submit that claims 8, 9, 10, 19, 27 and 28 are thus allowable over the combination of Brennan, Brassard, Abbratozzato and Yamano.

Section 11

Claims 12, 13, 18 and 29 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Brennan, Brassard and Abbratozzato as applied to the base claims, and further in view of Ebner (U.S. 4,935,655). The Examiner takes the position that the combination of Brennan, Brassard and Abbratozzato disclose the limitations of these claims except for the limitations of keying slots wherein at least two of the slots have different widths. For the reasons discussed above with respect to the base claims, applicants submit that the combination of Brennan, Brassard and Abbratozzato do not disclose or suggest all the limitations of the base claims. Applicants submit that claims 12, 13, 18 and 29 are thus allowable as depending from the base claims.

The Examiner cites to Ebner as disclosing keying slots of different widths. Ebner discloses a permanent magnet stator having a frame 1 in which two permanent magnet shells 2 and 3 are asymmetrically disposed with respect to each other. While the spaces between the permanent magnet shells 2 and 3 are shown to be unequal in the drawings, these are not disclosed as being keying slots. In fact, there is no mention of these spaces. The keying slots 95, 96, as described in the present application, are used to orient the stator assembly 30 in a magnetizer that is used to magnetize the

magnets 36 after stator assembly 30 is assembled. By having keying slots 95, 96 of different widths, the number of orientations in which stator assembly 30 can be placed in the magnetizer is reduced from four to two. [Application, paragraph 35] In Ebner, there is no mention of when permanent magnet shells are magnetized and no mention of the spaces between the permanent magnet shells. Applicants submit that Ebner thus cannot be said to disclose or suggest keying slots.

ALLOWABLE SUBJECT MATTER

The Examiner states that claims 7, 16 and 26 would be allowable if rewritten in independent form. Applicants submit that for the reasons discussed above, the base claims from which these claims depend are allowable and submit claims 7, 16 and 26 are also allowable.

CONCLUSION

It is believed that all of the stated grounds of rejection have been properly traversed, accommodated, or rendered moot. Applicant therefore respectfully requests that the Examiner reconsider and withdraw all presently outstanding rejections. It is believed that a full and complete response has been made to the outstanding Office Action, and as such, the present application is in condition for allowance. Thus, prompt and favorable consideration of this amendment is respectfully requested. If the Examiner believes that personal communication will expedite prosecution of this application, the Examiner is invited to telephone the undersigned at (248) 641-1600.

Respectfully submitted,

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